

Ordinance language establishing a water quality protection area policy for  
Murfreesboro  
Draft – Revision following stakeholder meeting 1/9/2006

1. Definitions

[Those in brackets are already present in the Stormwater Management Ordinance.]

*Active Channel.* The area of the stream channel that is subject to frequent flows (approximately once per one and a half years) and that includes the portion of the channel below where the floodplain flattens. *Top of bank* refers to the landward edge of the active channel.

*Drip Line.* A vertical line extending from the outermost edge of the tree canopy or shrub branch to the ground.

[Development. Any man-made change to improved or unimproved real estate, including but not limited to, Buildings or other Structures, mining, dredging, Filling, Grading, paving, excavating, drilling operations, or permanent storage of materials (defined as materials of like nature stored in whole or in part for more than six months).]

*Greenway.* A linear open space established along a natural or constructed corridor (e.g. stream, river or railroad) which is designed to connect recreational areas with cultural or historic features and/or populated areas for pedestrian and/or bicycle traffic. A Greenway is developed and maintained to provide protection of natural resources, transportation alternatives, and recreational opportunities. A Greenway may include associated amenities (e.g. interpretive markers, canoe launching areas, and trailhead facilities such as buildings, picnic areas and playgrounds) with the linear pathway.

*Managed Vegetation* refers to management that does not involve grubbing, clearing, tilling, disking or plowing of the ground. Cutting, pruning, no-till planting, and aeration are allowed activities of Managed Vegetation.

*Stream* refers to waters of the state except for those waters flowing within Wet weather conveyances. In the absence of a definitive assessment by the State of whether a watercourse is a stream or a Wet-weather conveyance, the following Watercourses are considered to be streams:

- i. Watercourses serving drainage areas of 100 acres or more, provided that the watercourse existed prior to the Development under consideration for application of the WQPA;
- ii. Watercourses known to flow regularly after seven days of dry weather (e.g., spring-fed surface water);
- iii. Watercourses identified as a dashed blue line on the USGS map; and

iv. Watercourses identified as a continuous blue line on the USGS map.

The City may conclude, subject to review by the State, that a Watercourse or segment of Watercourse is not a Stream, based on a review of field data assessing its geomorphology, hydrology and biology.

[Redevelopment. Any man-made change to improved real estate, including but not limited to, Buildings or other Structures, mining, dredging, Filling, Grading, paving, excavating, drilling operations, or permanent storage of materials (defined as materials of like nature stored in whole or in part for more than six months). (Note: Demolition and reconstruction is considered Development and not Redevelopment.)]

Seedling/Sapling: A deciduous, native, non-invasive canopy tree with a minimum height of 24 inches and minimum caliper of 3/8 inches at time of planting. Seedlings/ Saplings can be bare-root or container grown. All Seedling/Saplings are to have well developed root systems, to be free of insects and disease as well as mechanical injuries, and in all respects to be suitable for field planting.

*Significant Redevelopment.* Redevelopment that has a value greater than 50% of the property's current assessed value; increases the Impervious Surface area of the property; redirects the flow of storm water in any way; modifies the storm sewer system; or is likely to result in additional pollutants to the storm water characteristics.

*Top of bank.* The landward edge of the Active Channel.

*USGS map* refers to the most recent 7.5 minute series (topographic) map for the location under consideration.

[Watercourse. A Channel, natural depression, slough, gulch, stream, creek, pond, reservoir, or lake in which storm runoff and flood water flows either regularly or infrequently. This includes major drainage ways for carrying urban storm runoff.]

*Water quality protection area.* Undisturbed vegetation, including trees, shrubs and herbaceous vegetation; enhanced or restored vegetation; or the re-establishment of vegetation bordering Streams, ponds, wetlands, reservoirs or lakes, which exists or is established to protect those waterbodies.

[Wetland. Those areas that are inundated or saturated by surface or ground water at a frequency or duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typical to life in saturated Soil conditions. Wetlands generally include, but are not limited to, swamps, marshes, bogs and similar areas.]

*Wet weather conveyances* are man-made or natural watercourses, including natural watercourses that have been modified by channelization, that flow only in direct response to precipitation runoff in their immediate locality and whose channels are above the groundwater table and which do not support fish and aquatic life and are not suitable for drinking water supplies. See the official compilation rules and regulations of the State of Tennessee, 1200-4-3-.04(4).

[Waters of the State. Any Watercourse determined to be in the jurisdiction of the Tennessee Department of Environment and Conservation (TDEC). Waters of the State are separate and distinct from an MS4 and private infrastructure.] As defined in the [Tennessee Water Quality Control Act](#), *waters of the state* or simply *waters* means any and all water, public or private, on or beneath the surface of the ground, which are contained within, flow through or border upon Tennessee or any portion thereof except those bodies of water confined to and retained within the limits of private property in single ownership which do not combine to effect a junction with natural surface or underground waters.

2. A water quality protection area (WQPA) is a strip of undisturbed vegetation, either original or re-established, bordering streams, ponds, wetlands, reservoirs or lakes, which provides:
  - a. A naturally vegetated and pervious buffer between a stream and clearing, grading, filling, paving and building activities of nearby new site development; and
  - b. Protection of stream quality, and resource management benefits.
3. In all Development and Redevelopment adjacent to Streams and Wetlands, the persons involved in the process of development shall provide for and ensure the establishment, protection, maintenance and function of the water quality protection area described below. In Development and Significant Redevelopment, the WQPA requirements apply to the whole site. In Redevelopment, the WQPA applies only to the specific area of Redevelopment.
4. Zone widths and target vegetation within the WQPA are as follows:
  - a. Zone 1 is measured perpendicular to the Stream channel. Zone 2 is measured along the same line beginning at the outside edge of Zone 1.
  - b. Where a Stream is indicated as a continuous blue line or double blue line on the USGS map, Zone 1 shall measure 35 feet from top of bank, and Zone 2, 15 feet.
  - c. Where a Stream is indicated as a dashed blue line on the USGS map, Zone 1 shall measure 35 feet from top of bank, and Zone 2, 15 feet.
  - d. Where a Stream is not indicated on the USGS map, Zone 1 shall measure 20 feet from top of bank, and Zone 2, 15 feet.

- e. The vegetative target in Zone 1 is a variety of mature vegetation, including trees, allowed to grow undisturbed. Native vegetation is preferred. Native vegetation is required for any new plantings, and invasive species are prohibited.
- f. While the preferred vegetation for Zone 2 is a variety of plants, including grasses, allowed to grow undisturbed, other forms of vegetation are allowed in Zone 2. Managed vegetation is allowed in Zone 2, subject to limitations in item 5. Native vegetation is required for any new plantings, except non-native lawn grasses are allowed.
- g. To summarize:

		Zone 1	Zone 2
WQPA width measurement	Stream represented by continuous blue line	35 feet from top of bank	15 feet
	Stream represented by dashed blue line	35 feet from top of bank	15 feet
	Stream not shown on USGS map	20 feet from top of bank	15 feet
Vegetative target, in areas with pre-existing trees alongside Stream:		Undisturbed, mature vegetation; native vegetation preferred; new plantings must be native vegetation	Undisturbed vegetation; native vegetation, including grasses preferred; other vegetation and Managed Vegetation is allowed; new plantings must be native vegetation

- h. When wetland areas extend beyond the edge of the required WQPA width, the WQPA shall be adjusted so that the area consists of the extent of the wetland plus a 35 foot zone extending beyond the wetland edge. The target vegetation in this zone shall be undisturbed, native vegetation.
- i. Ponds which intersect the Stream channel shall have the same WQPA as the original Stream measured from the top of the bank of the pond. WQPA requirements shall not apply to a detention or retention pond constructed as a water quality management practice.
- j. In areas of the WQPA without pre-existing tree canopy alongside the Stream, the property developer must enhance the WQPA by planting trees, as follows:

- i. Pre-existing tree canopy means a corridor of trees rooted within 15 feet of the Stream's top of bank providing canopy and shade along the Stream;
- ii. Where a property has no pre-existing canopy or the existing canopy is broken by a forty-foot or greater section or sections, with only low-growing vegetation (18 inches or less), as traced out by the drip lines of adjacent trees, the developer must plant trees in these sections
- iii. Planting standards and specifications
  - A variety of native tree Seedlings/Saplings planted within 15 feet of the top of Stream bank evenly spaced on approximately ten foot centers. No one species shall be planted and every effort should be made to observe the surrounding area and identify which native tree species dominate that particular locale so as to aid in the Seedling/Sapling selection process.
  - A plan shall be submitted to the City for approval, before there is any disturbance of the WQPA. The plan is subject to approval by the City Horticulturalist.
  - Planting must be done at a time to minimize stress to plants. All planting must be completed by the next planting season. Performance sureties shall not be released or final certificates of occupancy granted until the plantings are accomplished.
- iv. Planting standards and specifications for commercial properties

Plantings which fulfill the requirements for perimeter and buffer zone landscaping, of the City Zoning Ordinance, Section 27, may be allowed to serve as required WQPA plantings, where the plantings are adjacent the Stream and will function to establish canopy alongside the Stream.

- 5. Within both Zones 1 and 2 of the WQPA, persons are not allowed, except with prior written approval of the Planning Commission or City Engineer, or as allowed under items 6 below and 8 below:
  - a. to clear or grub existing vegetation;
  - b. to disturb soil by grading, stripping or other means;
  - c. to fill or dump;
  - d. to ditch or construct other storm water drainage systems;
  - e. to build or place structures; or
  - f. to use, store or apply pesticides, herbicides or fertilizers.
- 6. Disturbance of the WQPA is allowed where necessary for crossings by roads, bridges, paths and utilities, provided:

- a. the Planning Director or Planning Commission, in consultation with the City Engineer and Director of the Water and Sewer Department, have provided prior written approval to the land developers;
  - b. options to reduce or eliminate the crossing are examined and prove to be not economically feasible;
  - c. the width of disturbance during installation and maintenance is kept to a minimum;
  - d. the angle of crossing should be perpendicular or within 15 degrees of perpendicular to the Stream, to minimize clearing requirements;
  - e. a minimum of crossings is used; and
  - f. the design of roadways and lots within a residential subdivision development avoids driveway Stream crossings
7. The City may allow disturbance of a WQPA where necessary for the repair and maintenance of public improvements, provided that specifications for the project address means to avoid and lessen adverse impacts to Streams, wetlands and associated aquatic ecosystems. Nothing herein shall prohibit usual and customary maintenance of public utility rights-of-way, provided that measures are taken to avoid or minimize adverse disturbance to the WQPA.
8. Acceptable structures and activities within the WQPA include:
- a. In Zone 1 - Publicly accessible Greenways; road, bridge and utility crossings; and
  - b. In Zone 2 – Uses allowed in Zone 1; utility right-of-way;
- Provided:
- The Planning Director, in consultation with other departments, provides prior written approval; and
- That plans for such construction minimize impervious areas and show methods of construction to minimize ground disturbance, compaction of soil, and removal of trees.
9. Management of the WQPA
- a. Management of the WQPA shall be the responsibility of the property owner. Ownership can be collective rather than individual. (For example, a homeowners association.)
  - b. Property owners are allowed to have Managed Vegetation in Zone 2; subject to limitations in item 5..
  - c. Removal of individual trees in the WQPA is allowed, where the tree is likely to fall and damage dwellings or other structures, or to cause blockage of the Stream; the root wad or stump should be left in place, where feasible, to maintain soil stability.

- d. Property owners may be allowed to remove invasive, exotic plant species in the WQPA, provided that permission is given in writing by the City Horticulturalist.
10. The following criteria apply to design, placement and operation of Greenways within the WQPA:
- a. Design and placement outside Zone 1 insofar as practicable;
  - b. Design and placement that takes into account natural fluctuations in Stream channel;
  - c. Design and placement that takes into consideration the location of invasive, exotic plants or other undesirable vegetation or lack of vegetation;
  - d. Grading and post-construction planting to maintain or establish storm water sheet flow and infiltration of storm water to the maximum extent practicable;
  - e. Where watercourses cross the Greenway, care to provide ample culvert or channel structure to avoid scour;
  - f. Minimizing disturbance of native vegetation and more valuable trees
  - g. Re-establishing vegetation where missing;
  - h. Management of the Greenway including litter pick-up and monitoring and elimination of erosion or other polluting activities;
  - i. Management of the Greenway to include removal of invasive, exotic plants; and
  - j. Providing programs or materials to educate users about surface water quality.
11. All WQPAs must be protected during Development activities.
- a. Prior to the initiation of any grubbing or clearing of vegetation, and prior to any pre-construction drilling, cutting or soil-sampling, the developer shall ensure adequate visibility of the WQPA by staking and flagging at the outer edge of Zone 2 or by silt fence placed at the edge of or outside the WQPA.
  - b. If the property owner or agent removes or destroys vegetation within the WQPA, the City will require the owner to restore vegetation, including Stream bank stabilization as necessary, according to a plan approved by the City.
  - c. In cases where a property owner or agent is permitted by the Tennessee Department of Environment and Conservation to relocate a Stream, the WQPA shall apply to the relocated Stream, and the City will require establishment or re-establishment of vegetation within the WQPA of the relocated Stream.
12. Stream banks and other areas within the WQPA must be left stable upon completion of the Development activities. The condition of vegetation within the buffer must be monitored, and planting, landscaping or stabilization

performed to repair erosion, damaged vegetation, or other problems identified. Only native vegetation may be used in conjunction with stabilization activities.

13. All Site Development plans and plats prepared for recording shall:
  - a. Show the extent of any WQPA on the subject property by metes and bounds and be labeled as “Water Quality Protection Area – Do Not Disturb”;
  - b. Provide a note to reference the WQPA, "There shall be no clearing, grading, construction or disturbance of soil and/or native vegetation except as permitted in writing by the City of Murfreesboro"; and
  - c. Provide a note to reference protective covenants governing all WQPAs, stating, "Any water quality protection area (WQPA) shown hereon is subject to protective covenants which restrict disturbance and use of these areas."
14. All WQPAs shall be maintained through a declaration of protective covenant, which is required to be submitted for approval by the Planning and Engineering Department. The covenant shall be recorded in the land records and shall run with the land and continue in perpetuity.
15. The WQPA requirements apply to all proposed development and Significant Redevelopment, except for Development which prior to the effective date of this ordinance:
  - a. Is covered by a valid, unexpired plat in accordance with development regulations;
  - b. Is covered by a current, executed public works agreement;
  - c. Is covered by a valid, unexpired building permit; or
  - d. Has been granted a waiver in accordance with current development regulations.
16. The Water and Sewer Board may grant a variance for the following:
  - a. Those projects or activities where it can be demonstrated that strict compliance with the ordinance would result in extreme practical difficulty or substantial financial hardship; or
  - b. Those projects or activities serving a public need where no feasible alternative is available.
  - c. To request a variance, one must submit a written request to the Director of the Murfreesboro Water and Sewer Department, expressing reasons for the request and providing information for the City and hearing board to evaluate the proposal. The City may require an analysis to demonstrate no feasible alternatives exist and to show minimal impact will occur as a result of the project. When a variance is granted as to the width of the WQPA in one area, the applicant must normally demonstrate that the average width of the WQPA across the length of the Stream channel for



that Development equals or exceeds the otherwise applicable WQPA width.

17. Where the standards and management requirements of this buffer ordinance are in conflict with other laws, regulations, and policies regarding streams, wetlands, floodplains, land disturbance activities or other environmental protective measures, the more restrictive requirements shall apply.

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